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Items of Current Research

FOREST PRODUCTS LABORATORY* FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

Madison, Wisconsin



Release July 20, 1935

LAUNCH FIBER BOX TESTS

NEXT to the printing press, the largest consumer of wood pulp in the United States is the fiber container industry. Improvements in fiber box construction are the goal of Forest Products Laboratory engineers in a new series of tests and experiments launched recently with the installation of standard machinery for making commercial fiber board.

Items added to the Laboratory equipment include a standard corrugator and a solid fiber paster, set in tandem so that a single cut-off knife may be used for both. Single or double face board with large or small corrugations, double wall board with any combination of corrugations, and solid fiber board from two to six plies thick can be made with this machinery. Standard and special controls enable the operators to make runs with different types of paper and with variations in speed, steam pressure, gluing, and other conditions. The intent of these experiments is to develop principles of fiber board and fiber box manufacture similar to those already developed for the construction of wooden boxes.

To accomplish this objective special tests of the strength properties of container papers are first made, comparable to strength determinations of other engineering materials. Next the properties of built-up boards are examined, including bending, shear, and compressive strength, and the effect of manufacturing variables on the strength and rigidity of the board. The third group of tests will deal with engineering and service properties of the completed box; and, finally, the results of each group will be correlated into structural formulas.

Successful culmination of these investigations will mean that the fiber box industry can produce a standardized line of containers whose qualities are effectively predetermined for classified uses. Present production is based largely on empirical standards set up years ago and on various adaptations of manufacturing practice as dictated by special requirements and new sources of paper supply. A thorough understanding of the principles of fiber box construction is essential both to the production of more economical boxes and to the reduction of unnecessary loss and breakage in shipment.

* Maintained at Madison, Wis., in cooperation with the University of Wisconsin

WOOD FOR TODAY IS THEME OF MANUAL

Answering a long-felt need of engineers, architects, and other wood users, the Forest Products Laboratory has assembled the results of years of research as well as the common knowledge gained during centuries of wood use into a compact handbook that deals with the facts about wood in a convenient and authoritative manner.

In this volume of 300 pages the user of wood has at his command information that is as up-to-date as anything serving a similar purpose for the user of concrete, steel, or other modern building materials. Publication of the work will thus correct the anomalous position wood has occupied as the most widely used building material without heretofore ever having had the data concerning its use gathered together from reports, magazine articles, and other sources into the covers of a single book.

The handbook demonstrates the availability of wood for today's uses. It combines time-tested and approved information with newer developments that have modernized lumber classifications and handling, shed new light on timber stress relations, shown how to build and maintain wood structures for lasting service, and made possible new forms of wood construction that are far ahead of older conceptions. Among the subjects treated are the structure and composition of wood; its physical properties and working qualities, its decorative features, and its electrical and thermal resistance; its mechanical qualities, including fatigue effects, and the direction of growth ring alignment in the piece; painting data

on the principal structural species; treating for fire resistance, and many other phases of wood use.

Confining its emphasis to wood as a material, the handbook is not concerned with extensive tabular data based on engineering computations. Rather it sets up the fundamental data upon which computation can be more correctly based, and it answers the principal questions of the practical man as to the where, the why, and the how of wood use to get the best results. Orders for the Forest Products Laboratory's Wood Handbook should be sent to the Superintendent of Documents, Government Printing Office, Washington, D. C. Copies will be ready for distribution not later than the end of July, at a nominal price.



FENCES FOR SHELTERBELTS

One of the greatest forestry projects on record is that just inaugurated by the U. S. Forest Service in undertaking the establishment of protective windbreaks or shelterbelts within a 100-mile-wide strip of territory in the Great Plains region. This strip, known as the Shelterbelt Zone, extends for about 1,150 miles in an angular course from the Canadian border in central North Dakota to a line in Texas just north of Abilene. Accompanying the tree planting activity, which started off this spring with 125 miles of strip planting, is

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PICKETS FROM THICKETS

A RUSTIC FENCE for the lawn or garden can be easily and rapidly put together by interlacing freshly cut unpeeled rods of aspen, birch, cedar, or other suitable species on a framework of three poles or rails. Top, middle, and bottom rails are first fixed firmly to fence posts. This may be done by socketing the rails into large single posts, by wiring them in position between pairs of small posts, or in other ways that provide good anchorage.

The picket rods are then woven into each panel. The first rod, say, is bowed to the right as it passes from top to bottom around the middle rail; the next is bowed to the left, and so on, alternately. Or the pattern can be varied, as 2-2-1-1, so long as the strain is properly balanced. The whole locks into a firm and symmetrical panel unit.

Rails should be spaced as far apart as the length of the picket rods allows, so as not to require too sharp a bend in the latter. Rods should extend only far enough above and below the rails to maintain a good grip; otherwise their spread might be considered objectionable.

Dimensions used in designing one of these fences were the following: Posts (in pairs), 2½ inches in diameter, 5½ feet long, set one foot deep. Rails, not more than 3 inches in diameter at large end, length 8 to 12 feet as dictated by straightness and

taper of available pole material; middle rail placed with taper opposite that of the other two. Pickets, ¾ to 1½ inches in diameter, 50 inches long.

It is realized that such fencing would not be particularly economical to build if special effort had to be made to locate the necessary materials. It does, however, offer attractive possibilities where there is need to secure commercial outlets for forest thinnings or to market a useful crop from thickets and other inferior growth that would otherwise pay no return.

PAINT ANTAGONISMS

CHEMICAL CLASHES between paints are the subject of recent investigations by Forest Products Laboratory chemists, who hold these hidden conflicts accountable for many failures of exterior repaint jobs on houses.

Premature cracking and scaling are the most common manifestations of paint antipathies, which are apparently mutual in paints of different pigmentation. For example, a white or tinted paint cannot be applied over brown, green, or deep red without risk of early damage. Even between whites and tinted whites themselves incompatibilities may exist, especially when differences in amount and kind of pigment are marked. Consequently it is considered inadvisable to change the color scheme of a home or other building radically without taking possible "paint disagreements" into consideration.

In general, paints which get along badly with each other are: White paint over any full-color paint; paints of varying kinds and proportions of solid content; and paints containing varnish when covered with paints lacking varnish.

SHELTERBELT FENCES — *Cont. from page 2*
the enormous job of fencing, for the young trees must be safeguarded against livestock depredations and other trespass while they are gaining a secure foothold on the land.

In the matter of fence posts, of which millions may be required later, the Forest Products Laboratory stands in an advisory relation to the Plains Shelterbelt Project. The recognized objective is, of course, to obtain strong and long-lasting fences at the lowest first cost and maintenance expense consistent with good service. To this end, particular attention is being given to the records of various wood species used as fence posts, and to the economics of various preservative treatments.

A first lot of 50,000 ponderosa pine posts for shelterbelt fencing was given pressure treatment at a Minneapolis creosoting plant in May, under specifications prepared by the Laboratory after a number of preliminary tests. The posts, ranging from 3 to $6\frac{1}{2}$ inches in top diameter, were the product of thinnings made by C. C. C. workers in the Custer National Forest of North Dakota — a fact which forcefully demonstrates one of the uses of silviculture and

emphasizes the effort to realize on available resources in carrying forward the Shelterbelt Project.

Estimates for next year's post requirements are considerably larger, and the Laboratory is in consultation with the shelterbelt authorities as regards species and type of post material, conditions of exposure, and results of service tests now in progress.



BULLETINS READY SOON

Wood users of the United States will find information of value in two Forest Products Laboratory publications that will be available at small cost from the Government Printing Office late in July.

One, a handbook dealing with strength and related properties of woods grown in the United States, brings up to date the tables and other material contained in Technical Bulletin No. 556 of the U. S. Department of Agriculture, and includes data on additional species. It will appear as Technical Bulletin No. 479 of the Department. The other, designated as Miscellaneous Publication No. 224, is a manual on the preservative treatment of wood by pressure. It is the first manual in existence covering the entire field of pressure preservative treatments, and contains numerous examples of practical applications that should be of value to engineers.